

**REMARKS**

**I. Introduction**

Claims 1, 2 and 5-10 are currently pending in this application. Claims 3 and 4 have been canceled without prejudice. Independent claims 1 and 2 have been amended, support for which is found throughout the specification, for example, in paragraph [0022]. Claims 9 and 10 have been added and are supported by original claims 7 and 8. Claim 8 has been amended to correct an informality. No new matter has been added.

In view of the foregoing amendments and the foregoing comments, it is respectfully submitted that that claims are allowable and the application is in condition for allowance.

**II. Claim rejection under 35 U.S.C. § 103(a)**

Claims 1-8 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Christian (WO 03/076339) in view of Noya (US 6,566,009). Applicants respectfully disagree with the rejections.

However, in an effort to expedite prosecution, independent claims 1 and 2 have been amended to further define the subject matter of the application. As now amended, claims 1 and 2 each recite, in pertinent part, that **“the amount of said nickel oxyhydroxide is 30 to 60 wt%, and the amount of said electrolytic manganese dioxide is 40 to 70 wt%, relative to the total amount of said nickel oxyhydroxide and said electrolytic manganese dioxide contained in said positive electrode material mixture”**

At a minimum, none of the cited prior art references teach or suggest the electrode material composition as recited in amended claims 1 and 2 in which the amount of the electrolytic manganese dioxide is 40 to 70 wt%, relative to the total amount of the nickel

oxyhydroxide and the electrolytic manganese dioxide contained in the positive electrode material mixture.

In contrast to the present invention as recited in claims 1 and 2, Christian discloses on page 10 lines 8 to 11, that generally the cathode can include, for example, *between 60 wt% and 97 wt%, between 80 wt% and 95 wt%, or between 85 wt% and 90 wt%* active cathode material; and the cathode includes an active cathode material (e.g. nickel oxyhydroxide), and, *conductive carbon particles*.

Thus, when the amount of the nickel oxyhydroxide included in the cathode of Christian is 60 wt%, which is the lower limit taught by Christian, the remainder is 40 wt%. As noted above, the cathode of Christian also includes an amount of *conductive carbon particles* in addition to the active cathode material. Hence, based on the foregoing, it is clear that in Christian the amount of the electrolytic manganese dioxide relative to the total amount of the nickel oxyhydroxide (lower limit 60 wt%) is *less than 40 wt%*.

In other words, Christian discloses that at a minimum, 60 wt % of the cathode material is nickel oxyhydrioxide, which means that conductive carbon particles and any other component make up the remaining 40 wt % of the cathode. Furthermore, because Christian requires that at a minimum the cathode includes 2 wt % of conductive carbon particles, (see Christian page 10, lines 28-31), even if electrolytic manganese was added to the cathode of Christian, it would not be in the range of 40 to 70 wt % as recited in amended claims 1 and 2<sup>1</sup>. Noya can not cure this teaching away of Christian.

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<sup>1</sup>  $(100 \text{ wt \%} - [40 \text{ wt \% of nickel oxyhydrioxide} + 2 \text{ wt \% of conductive carbon particles}]) = 38 \text{ wt \%}$ , i.e. less than 40 wt %).

Accordingly, even if the electrolytic manganese dioxide disclosed in Noya is incorporated in the cathode of Christian, the amount of the electrolytic manganese dioxide would be less than 40 wt%.

Moreover, a person having ordinary skill in the art would not have found it obvious to modify Christian in view of Noya in such a manner as to achieve the configuration recited in claim 1 and 2 because such a composition achieves unexpectedly improved results.

An alkaline battery according to the present invention achieves unexpectedly improved high load and low load discharge performance. In contrast, Christian discloses a  $\beta$  or  $\gamma$  type nickel oxyhydroxide on which aluminum, manganese, cobalt, zinc, gallium, indium, or bismuth is doped. As such, the present invention obtained when the nickel oxyhydroxide and the electrolytic manganese dioxide are used in combination in a predetermined ratio would not have been obvious for one skilled in the art, even in view of Christian and Noya.

The unexpected results are clear from the results shown in Table 3 of the present invention, and explained below.

Batteries D1, E1 and F1 using nickel oxyhydroxide that contains manganese dissolved therein are Examples of batteries of the present invention. The discharge capacity (in relative terms) at a low load discharge (at 45 mA to 0.9 V) was 103 to 108. In contrast, batteries G1, H1 and I1 using nickel oxyhydroxide that contains zinc dissolved therein exhibited a discharge capacity at the low loaded discharge of 98 to 103. Further, batteries J1, K1 and L1 exhibited a discharge capacity at the low loaded discharge of 99 to 104. These results indicate that the batteries D1, E1 and F1 have unexpectedly improved low load discharge performance.

Further, the batteries exhibited a discharge capacity at a high load discharge (at 1W to 0.9 V) of 109 to 110. In contrast, the batteries G1, H1 and I1 exhibited a discharge capacity at the

high loaded discharge of 98 to 103. Further, batteries J1, K1 and L1 exhibited a discharge capacity at high loaded discharge of 99 to 100. These results indicate that the batteries D1, E1 and F1 are also unexpectedly improved high load discharge performance.

Moreover, Applicants respectfully traverse the Examiner's assertion in the Final Office Action mailed on December 24, 2010, that Applicants have allegedly not shown unexpected results. Applicants *In re Geisler*, 116 F.3d 1465 (Fed. Cir. 1997), citing the holding in *In re Soni* noted, “[W]hen an applicant demonstrates *substantially* improved results . . . and *states* that the results were *unexpected*, this should suffice to establish unexpected results *in the absence* of evidence to the contrary.” *Geisler*, 116 F.3d at 1471 (quoting *In re Soni*, 54 F.3d 746, 751, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995)) (emphasis in original). Because Applicants have presented evidence of unexpected results, while the Examiner has not presented any evidence to counter the unexpected results, it is clear that unexpected results have been established.

As such it is clear that claims 1 and 2 are allowable over the cited prior art references because none of the prior art references teach or suggest the configuration recited in claims 1 and 2 and also because such a configuration achieves unexpected results that would not be obvious to a person having ordinary skill in the art.

Accordingly it is respectfully submitted that claims 1 and 2 are allowable. Furthermore, claims 5-10 depend from and further define the subject matter of claims 1 and 2, respectively, as recited above and therefore are also allowable.

**III. New claims 9 and 10**

New claims 9 and 10 are allowable based on their dependencies from claims 1 and 2 respectively for the reasons discussed above in reference to claims 1 and 2. Furthermore, claims 9 and 10 are also allowable based on their own merits.

Claims 9 and 10 each recite, in pertinent part, that the positive electrode material mixture further contains at least one rare earth metal oxide selected from the group consisting of  $\text{Er}_2\text{O}_3$ ,  $\text{Tm}_2\text{O}_3$  and  $\text{Lu}_2\text{O}_3$ , and the amount of said rare earth metal oxide is 0.1 to 2 wt% relative to the total amount of the nickel oxyhydroxide, the electrolytic manganese dioxide, the graphite conductive material and the rare earth metal oxide. Neither Christian nor Noya, either alone or in combination teach or suggest such a composition.

Accordingly, claims 9 and 10 are allowable.

**IV. Conclusion**

In view of the above amendments and remarks, Applicants respectfully submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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